

REMARKS

Claims 18-21, 23, and 26 are pending. Claims 18-26 have been rejected under 35 U.S.C. §103. Claims 1-17, 22, 24, and 25 have been cancelled in previous correspondence with the Patent Office, and claim 26 is cancelled herein. Claims 27-30 have also been cancelled herein as being drawn to a non-elected invention. Claim 18 is amended herein, and claim 31 is newly added. Support for the amendment to claim 18 is found in at least paragraph [0015] of the specification and claim 26, and support for new claim 31 is found in claims 18, 25, and 26. Claims 18-21, 23, and 31 remain for consideration upon entry of the present Amendment. No new matter has been added.

Applicants acknowledge the Examiner's withdrawal of the previous rejections of claims 18-26 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,149,738 to Dahlback (hereinafter "Dahlback"). Applicants also understand that new grounds of rejection have been established in the final Office Action of March 18, as indicated below.

Claims 18-26 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Dahlback. (Of these claims, only claims 18-21, and 23 remain pending.)

With respect to claims 18-21 and 23, the Examiner alleges that Dahlback discloses a method of producing and treating a sheet for a component in a fuel assembly for a nuclear light water reactor, comprising producing a sheet of Zr-based alloy by forging, hot-rolling, and cold-rolling in a number of steps, wherein the alloy contains by weight at least about 96% Zr; carrying out a beta quenching when the sheet has been produced in the finished dimension or almost finished dimension; and heat treating the sheet after the beta quenching in a temperature range of 600-800 degrees C. The Examiner also alleges that the heat treatment temperature range of Dahlback overlaps the claimed temperature ranges in claims 20 and 21. The Examiner further alleges that, therefore, a *prima facie* case of obviousness exists.

The Examiner notes that Dahlback does not disclose that the sheet is stretched during heat treatment as recited in claim 18. The Examiner alleges that Dahlback, however, discloses that during the heat treatment the flatness of the sheet is restored, and that this reads on the claimed limitation, and further that it would have been obvious to one of ordinary skill in the art that the sheet of Dahlback would have been stretched during the heat treatment in order to become flat again.

The Examiner also notes that Dahlback does not disclose the remaining elongations as recited in claims 18 and 23. The Examiner alleges that it is well held, however, that discovering an optimum value of a result-effective variable involves only routine skill in the art, and that in the instant case, the remaining elongation of the sheet of Dahlback is a result-effective variable because it would obviously affect the flatness and final properties of the sheet as disclosed by Dahlback, and that, therefore, it would have been obvious to one skilled in the art to have optimized the remaining elongation of the sheet of Dahlback in order to achieve a flat sheet with desired properties.

Dahlback discloses a fuel box and a method for manufacturing zirconium alloy plates for fuel boxes. The method includes a heat treatment after beta-quenching to restore the flatness of the product after beta quenching.

As noted by the Examiner, Dahlback fails to disclose, teach, or suggest that the sheet is stretched during heat treatment as recited in claim 18. A method of stretching the sheet during heat treatment (as recited in claim 18) is distinct from a method of heat-treating to restore flatness (as in Dahlback). More specifically, while claim 18 and Dahlback both include heat treatment, there is no stretching in Dahlback, and so claim 18 recites a step that is additional in view of Dahlback. The presence of this additional step as being “obvious” over the cited prior art is erroneous, and the inclusion of an extra (substantive) step in a claim is *prima facie* evidence that less than all of the steps are taught by the prior art.

With regard to the Examiner’s indication that Dahlback discloses that during the heat treatment the flatness of the sheet was restored (as recited in Dahlback in column 4, lines 52-59), and which allegedly reads on the claimed limitation thereby allegedly rendering the claim obvious, Applicants point out that the Examiner admits that Dahlback does not suggest stretching to provide a remaining elongation during the final heat treatment, as recited in claim 18. The Examiner is equating the restoration of flatness, as in Dahlback, with the stretching of the sheet, as recited in claim 18. Such reasoning by the Examiner is clearly based on the use of impermissible hindsight. Nothing in Dahlback indicates that a stretching should be carried out in order to restore the flatness.

Furthermore, in the Advisory Action, the Examiner “notes that Dahlback (‘738) does not specify how the flatness of the sheet is restored” and that “it would have been obvious to one of ordinary skill in the art that some degree of stretching would inherently occur in the sheet of Dahlback (‘738) during the final heat treatment in order to restore the flatness of the

sheet” and therefore “[e]quating the claimed stretching with the restoration of flatness of Dahlback (‘738) by the Examiner is proper and maintained.”

First, Applicants point out that the present invention recited in claim 18 is drawn to a method. The U.S. patent laws at 35 U.S.C. §101 specifically sets forth “process” as patentable subject matter. The Examiner’s point would be well taken if the instant claims were directed to an apparatus or a product by a particular process, but in this case they are directed to a method that recites explicit steps. Applicants also understand that claims are to be interpreted as broadly as their terms reasonably allow (MPEP, section 2111.01). However, Applicants respectfully contend that the terms “stretching” as recited in the claims and “heat treatment” or “restoring flatness” mean markedly different things especially in the context of a method claim and that, therefore, the interpretation that the Examiner has given them and equating the meanings of the terms to each other is not reasonable and not allowable.

Second, specifically in response to the Examiner’s statement that Dahlback does not specify how the flatness of the sheet is restored, Applicants point out that Dahlback (column 4, lines 52-59) explicitly states that the flatness of the sheet is restored via heat treatment. While restoration of flatness may be one effect of heat treatment, no mention is made of stretching (as admitted by the Examiner). Heating involves the radiation of thermal energy, whereas stretching is a physical process that involves physical contact in order to perform the stretching. The heating in Dahlback has nothing to do with physical contact – but stretching as recited in claim 18 does. Thus, Applicants respectfully submit that heating is an altogether different process than stretching is, that the two processes are non-analogous, and that one of ordinary skill in the art would not look to one for teachings regarding the other.

Moreover, the Examiner’s interpretation of the “stretching” as recited in the claims is incorrect. Stretching the sheet, as in the ordinary sense of the term “stretching,” means that the sheet is pulled. At least one manner of pulling is described in the specification (Figure 6 and the corresponding part of the description).

Applicants point out that claim 18 has been amended to incorporate the subject matter of claim 26 (claim 26 is cancelled herein). Newly added claim 31 has been written to also incorporate the subject matter of claim 26. Accordingly, stretching in the specified direction as recited in claims 18 and 31 is advantageous because it is easier to make the sheet flat if the stretching is effected in the longitudinal direction. Furthermore, the sheet is normally much

longer than it is wide, and if the sheet is stretched transversely to the longitudinal direction, the sheet is preferably gripped at the edges along substantially the entire length thereof. Such gripping may damage the sheet. If, on the other hand, the sheet is pulled in the longitudinal direction, it can be gripped at the narrow end thereof, which means that less material can potentially be damaged. Not only does Dahlback fail to disclose, teach, or suggest stretching in the longitudinal direction as recited in the claims, it fails to disclose, teach, or suggest any stretching.

With regard to the Examiner's allegation that it would be obvious to optimize the remaining elongation of the sheet of Dahlback in order to achieve a flat sheet with desired properties, Applicants respectfully point out that this also can only be determined based on the use of impermissible hindsight. It is impossible for one of ordinary skill in the art to discern that achieving a flat sheet having specific properties is the reason for the cited range. Arriving at this conclusion is purely speculative on the part of the Examiner.

Furthermore, the present invention as recited in claim 18 brings about various advantages. For example, during the heat treatment step of claim 18, improved corrosion properties are achieved since this heat treatment makes it possible for secondary phase particles to grow (see paragraph 16 in the description). Since the sheet is stretched during the heat treatment, the growth of secondary phase particles takes place faster since the stretching increases the diffusion speed. Moreover, since the heat treatment during the deformation leads to a considerably faster diffusion, it is possible to advantageously control the degree of growth of secondary phase particles through the applied deformation. No corresponding advantages are described in Dahlback. In fact, not only does Dahlback not suggest stretching, Dahlback never suggests that stretching should be carried out during the heat treatment.

Because Dahlback fails to disclose, teach, or suggest what Applicants recite in their claim 18, namely, stretching to provide a remaining elongation during the final heat treatment, as recited in claim 18, Dahlback fails to teach all of the claim recitations of Applicants' invention. Furthermore, because the Examiner is using impermissible hindsight to arrive at the invention as recited in claim 18, the Examiner's rejection of claim 18 should not stand. Consequently, because not all of the claim recitations are taught by the cited reference, and because the Examiner is relying on hindsight to arrive at Applicants'

invention, Applicants' claim 18 is necessarily non-obvious, and Applicants respectfully request that the Examiner withdraw the rejection thereof.

Claims that depend from a claim that is non-obvious are themselves necessarily non-obvious. Because claims 19-21 and 23 depend from claim 18, and because claim 18 is asserted to be non-obvious for the reasons presented above, claims 19-21 and 23 are necessarily non-obvious. Applicants, therefore, respectfully submit that claims 19-21 and 23 are allowable. Accordingly, Applicants respectfully request that the rejections of claims 19-21 and 23 be withdrawn.

Also, newly added claim 31 is non-obvious for the same reasons as claim 18. Furthermore, claim 31 specifies a preferred range for the remaining elongation. Such elongation is particularly advantageous. The cited prior art does not at all suggest such an elongation. In fact, the cited prior art does not suggest any stretching at all.

Applicants believe that the foregoing amendments and remarks are fully responsive to the Office Action and that the claims herein are allowable. An early action to that effect is earnestly solicited.

If the Examiner believes that a telephone conference with Applicants' attorneys would be advantageous to the disposition of this case, the Examiner is invited to telephone the undersigned.

Applicants herewith enclose fees for the RCE and the one-month extension of time. No other fees are believed to be due with the submission of this paper. If any charges are incurred with respect to this paper, they may be charged to Deposit Account No. 503342 maintained by Applicants' attorneys.

Respectfully submitted,

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